What Can The Carbon Markets Do For You? Manure Management in the Carbon Market

A project developer and buyer perspective

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About EcoSecurities

EcoSecurities voted "*Leading Greenhouse Gas Advisory Firm Worldwide*"

- Environmental Finance Magazine (2001-2006).

Market Milestones

- First emission reduction project registered by the UN under the Kyoto Protocol
- First project to receive Certified Emission Reductions (CERs) in the Kyoto market
- Largest number of registered projects

Carbon Credit portfolio (at of June 2007)

- **422 projects**
- **Projects reducing emissions** using **18 technologies** spanning **35 countries**
- Projects will generate over **140 million carbon credits through 2012**

Financial Metrics

- London Stock Exchanger Listed (ECO.L)
- Strategic investment by Credit Suisse – June 2007 (9% of current outstanding shares)

Our Core Business

How we create value

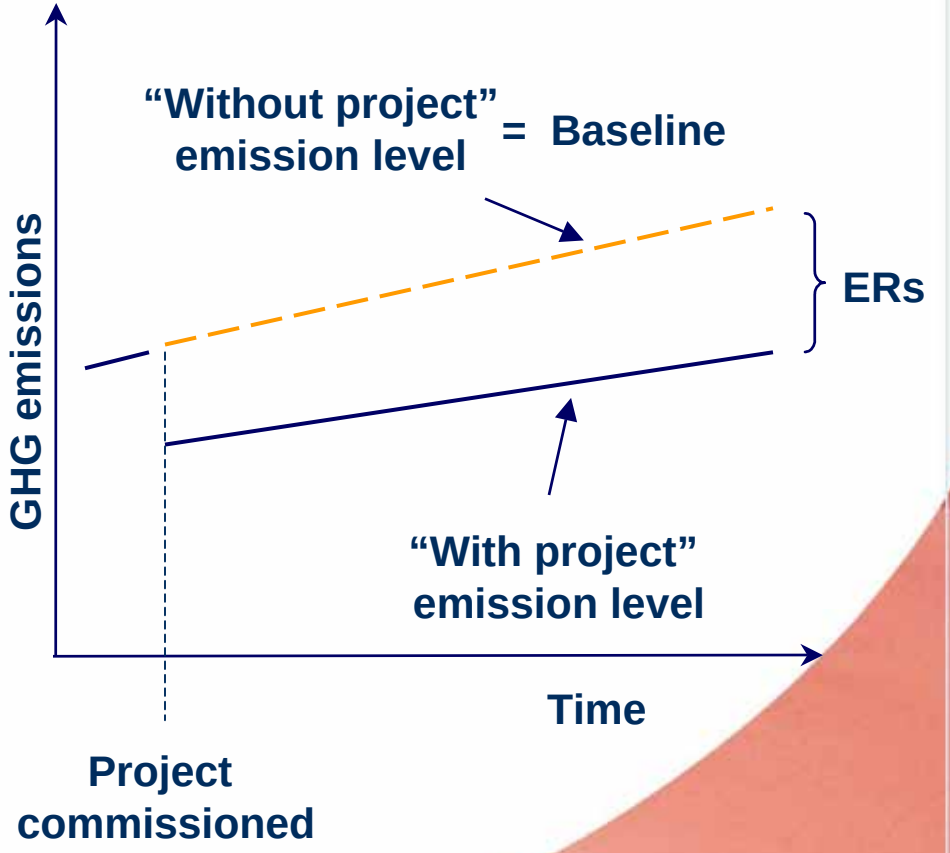
Creating value by efficient sourcing of emission reduction projects globally

Creating value by converting emission reduction projects to verified projects

Creating value by using our portfolio to reduce delivery risk

Emissions Trading: Concepts and Terms

- **Baseline**: Emissions that occur with the absence of the project activity.
- **Additionality:** Proof that emissions are reduced from what would occur without project.
- **CER or VER:** i.e. “carbon credit” or 1 ton reduction of greenhouse gases, measured as CO_2 equivalent.



Why are VERs valuable?

Types of Voluntary Buyers:

1. **Speculative and pre-compliance buyers**
   - Anticipate that GHG emissions will be regulated by federal climate change legislation

     S.1766 (Bingaman-Specter)

     S.280 (Lieberman-McCain)

     H.R. 620 (Olver-Gilchrest)

     S. 309 (Sanders-Boxer), etc.

2. **Corporate buyers**
   - Driven by corporate social responsibility and carbon neutral marketing that creates environmentally friendly product and brand value (i.e. NIKE, Google, HSBC)
3. **Retail buyers**
   - Motivated to “offset” their personal lifestyle emissions such as travel

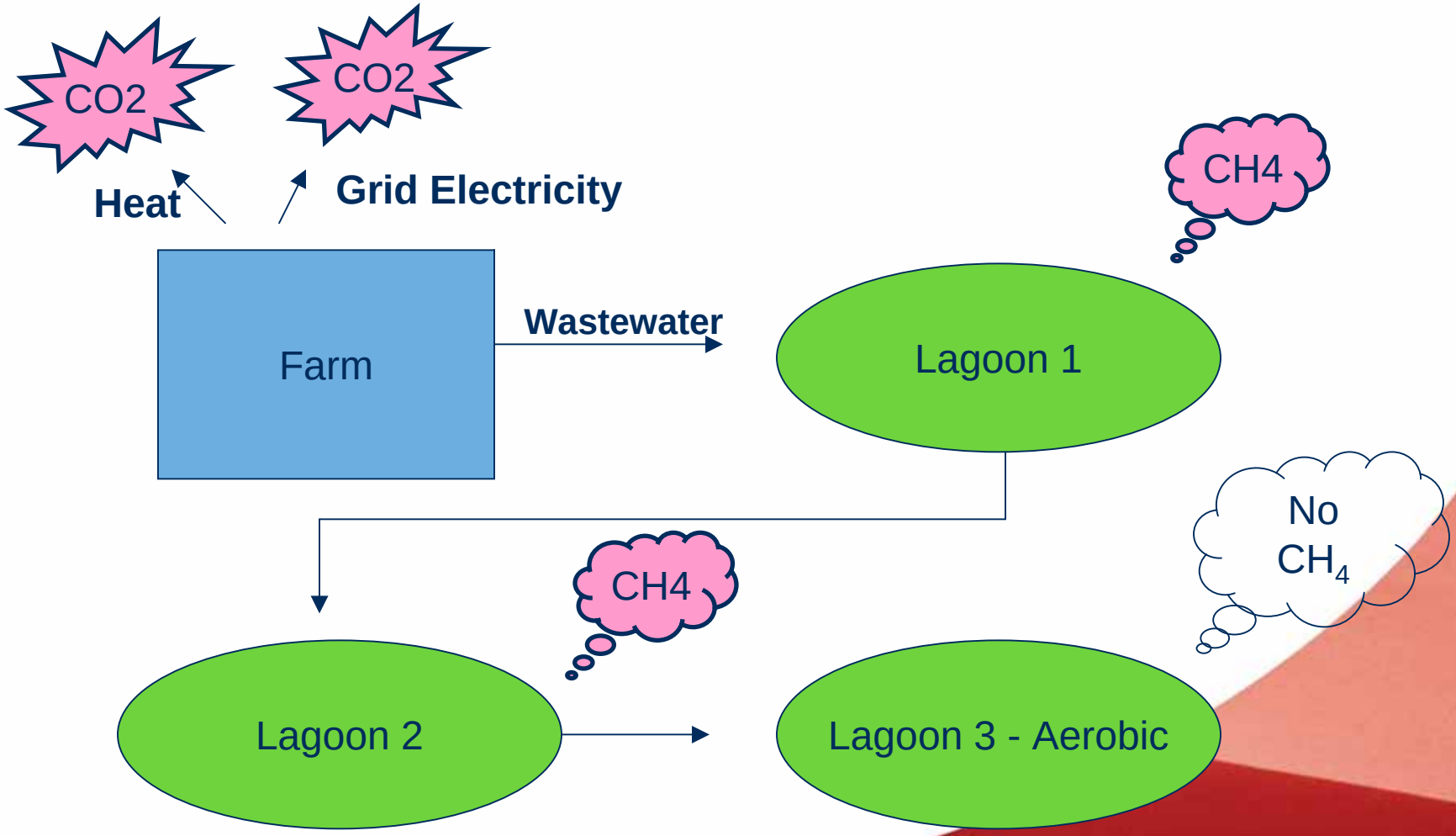
US Climate Policy

1. **State action has contrasted federal inaction since 2001**
   - North Carolina SB 1465
   - California and other Western States
   - Northeast states have formed RGGI
   - More than 30 states have some form of GHG tracking or management in place
2. **Fragmented market is potential business nightmare**
   - Change of congress has generated massive amount of new legislative proposals on GHGs
   - Increasing corporate pressure from industrial concerns (e.g.CAP)
   - Question is not “whether” but “When and “how”

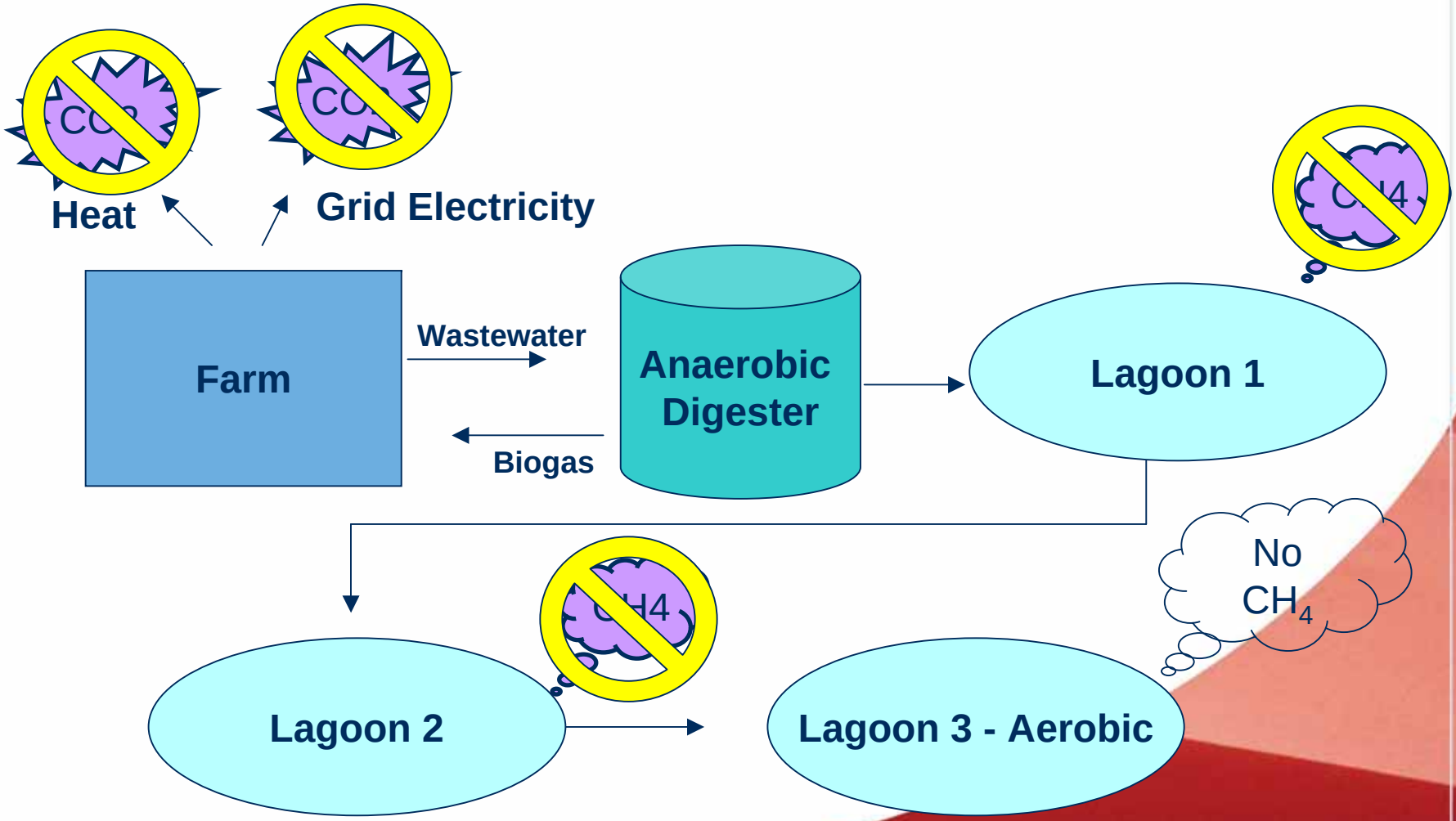
Reported Digester Benefits

- Decreased Energy Costs
- Potential Access to Carbon Credit Revenue
- Improved Handling of Wastewater
- Improved Environmental Quality
- Better Relations with Neighbors

Typical Swine Wastewater Treatment



Project Activity Under Voluntary Carbon Market



Attractive Anaerobic Digestion Projects

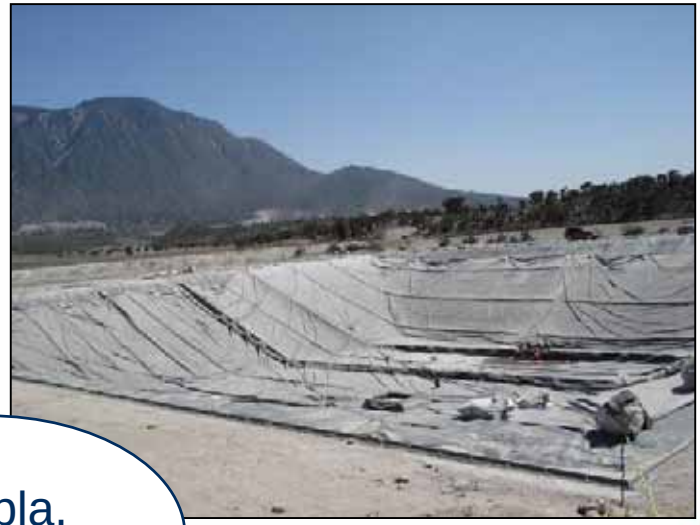
Dairy and Swine Farms

- > Newly proposed dairy operations
- > Existing dairy operations
  - – lagoon based management
  - – between 15 and 40 degrees C
  - – lagoons of greater than 1m in depth
  - – between 6.8 and 7.2 pH
  - – daily flushing systems
- > High on-site electricity consumption
- > Access to land for biodigester construction
- > Population requirement:
  - – 10,000 pigs
  - – 2,000 dairy cows
  - – 4,000 beef cows
  - – aggregated facilities

Anaerobic Digestion Case Study: Swine Based Methane Recovery and Electricity Generation

Type: **Animal waste from 67,064 pigs**

- 5000 sows
- 32 boards
- 4000 gilts
- 7504 nursers
- 50,528 wean-finishers



Puebla, Mexico

Benefits:

- **2,604,165.5** m^3 biogas / year
- **4,374,998** kWh electricity / year

Total Credits: 23,450 / yr

Attractive Anaerobic Digestion Projects

Ethanol Production Plants

>Existing Facilities (exploring greenfield projects)

>Sustainable distillers grain and/or manure in close proximity to plant

> High on-site natural gas consumption

>Access to land for biodigester construction

Anaerobic Digestion Case Study: Ethanol Natural Gas Replacement

Type: **50 MGY Ethanol Plant**

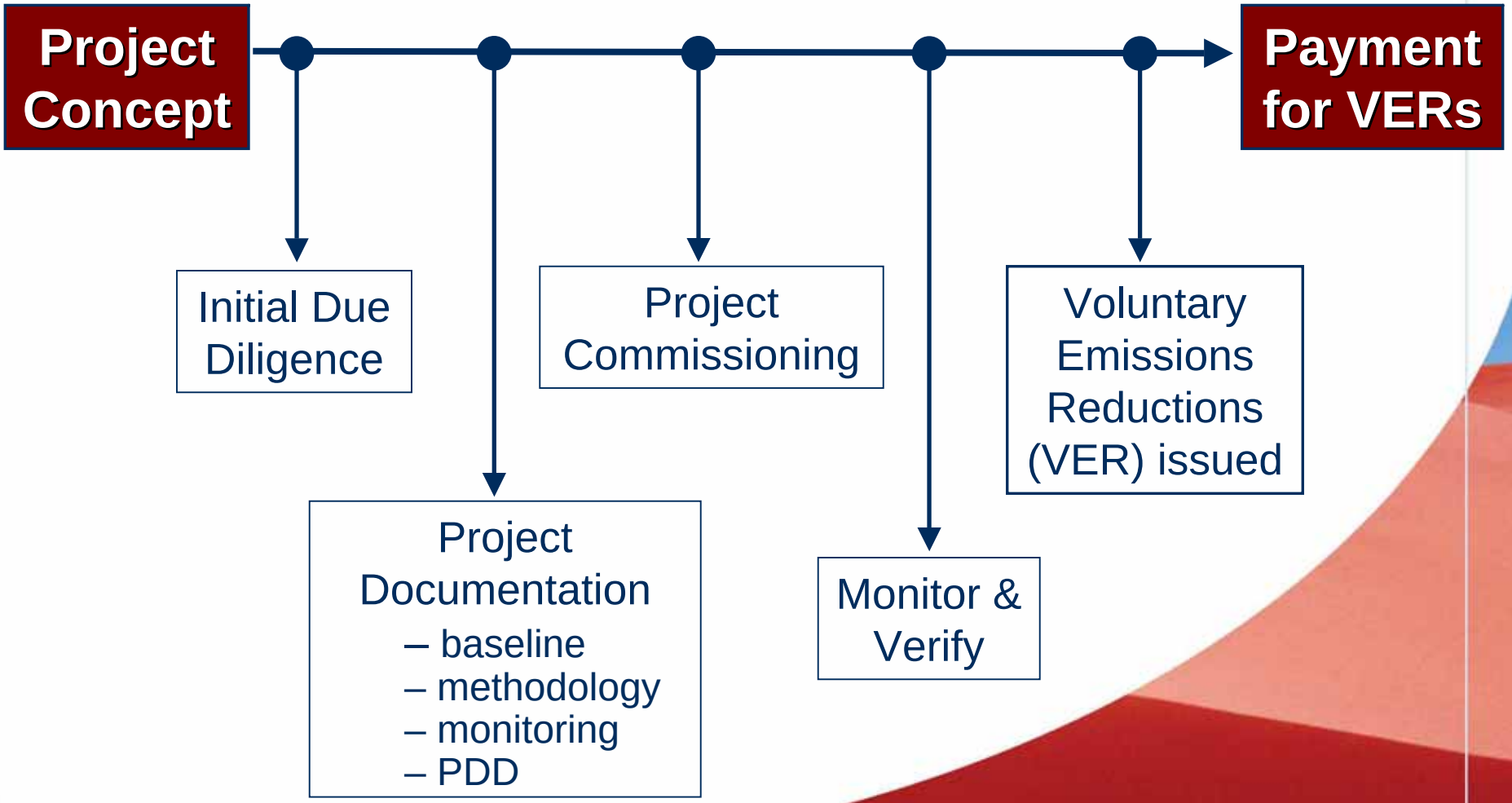
- Annual whole stillage produced: 127,000 tpy
- Steam demand: 700,000,000 lbs/yr
- Annual NG purchase: $12,500,000

Benefits:

- 1,700,000 mmBTU / year (biogas based)
- ¼ Reduced NG demand

Total Credits: 100,000 / yr

Project Development Timeline



In all cases, manure must be managed in open anaerobic lagoons (pre-digester)

1) Build, Own, Operate, Transfer (BOOT) Contract

EcoSecurities investment covers digester system costs

EcoSecurities owns and operates the digester for a number of years, during which we sell gas or electricity, if generated, to the producer for discounted price

Ownership of the digester is transferred to the producer after a set number of years

EcoSecurities is responsible for all aspects of the carbon credit creation process including documentation for monitoring and verification

Ownership of resulting VERs is negotiated on a case-by-case basis

2) Voluntary Emission Reduction Purchase Agreement (VERPA)

Digester financed and owned by the host producer

EcoSecurities guarantees to purchase your credits at a fixed price per VER for a fixed number of years

EcoSecurities is responsible for all aspects of the carbon credit creation process including documentation for monitoring and verification

THANK YOU!

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